S/M Code No.88-036 DATE OF ISSUE 6/1988-I

AIWA®

# SERVICE MANUAL

# HS-T150,T150M
# HS-T380
# HS-T120,T120M
# HS-T280

STEREO RADIO CASSETTE PLAYER

• BASIC TAPE MECHANISM : α −1 • TYPE. Y

## SPECIFICATIONS

| | |
|---|---|
| Frequency range: | FM: 87.5–108(108.1)MHz<br>AM: 531(530)–1,611(1,610)kHz |
| Maximum output: | 15mW + 15mW (EIAJ/32Ω)<br>20mW + 20mW (EIAJ/16Ω) |
| Power Source: | Battery DC 3V, R6P (SUM-3, AA, LR-6) × 2<br>Household AC power (using optional AC adaptor) |
| Battery life: | Using manganese batteries (R6P, SUM-3, AA)<br>Approx. 4 hours (EIAJ, 1 mW output, playback mode) |

- Design and specifications are subject to change without notice.
- Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
- Dolby and the DD symbol are trademarks of Dolby Laboratories Licensing Corporation.

AIWA Co., Ltd. Tokyo Japan

Printed in Japan

As to the disassembl instructions, refer to the service manual of HS-J150/J150M/J380.

## ELECTRICAL MAIN PARTS LIST

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **IC** | |
| | 87-001-351-019 | IC,AN6612S |
| | 87-020-956-019 | IC,BA3513AF |
| | 87-001-189-010 | IC,IR9393N |
| | 87-020-224-019 | IC,NJM2063A |
| | 87-001-379-010 | IC,TA8122AF |
| | 87-001-145-019 | IC,TA8126F |
| | 87-001-410-010 | IC,TC9308-009 |
| | 87-001-151-019 | IC,TD6134F1 |
| | **TRANSISTOR** | |
| | 89-502-094-019 | FET,2SK209(Y) |
| | 89-502-114-019 | FET,2SK211(Y) |
| | 89-111-625-019 | TRANSISTOR,2SA1162(GR) |
| | 89-112-134-019 | TRANSISTOR,2SA1213 Y |
| | 89-327-124-019 | TRANSISTOR,2SC2712(Y) |
| | 89-327-125-019 | TRANSISTOR,2SC2712GR(HS-T150) |
| | 89-327-143-019 | TRANSISTOR,2SC2714 O |
| | 87-026-440-019 | TRANSISTOR,DTA124TS(HS-T120) |
| | 87-026-224-019 | TRANSISTOR,DTC143XK |
| | 87-026-299-019 | TRANSISTOR,FMG4 |
| | 87-026-298-019 | TRANSISTOR,FMW1(HS-T150) |
| | 87-026-437-019 | TRANSISTOR,IMB3(HS-T150) |
| | 87-026-436-019 | TRANSISTOR,IMB6(HS-T150) |
| | 87-026-433-019 | TRANSISTOR,IMD3 |
| | 87-026-358-019 | TRANSISTOR,IMD6(HS-T150) |
| | 87-026-434-089 | TRANSISTOR,IMH7 |
| | **DIODE** | |
| | 87-020-125-089 | DIODE,CHIP 1SS181 |
| | 87-020-339-019 | DIODE,CHIP 1SS226(HS-T150) |
| | 87-020-737-010 | DIODE,CHIP MA713 |
| | 87-001-381-019 | DIODE,ZENER HZ2ALL |

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **MAIN CIRCUIT BOARD SECTION** | |
| PCB-A | 84-469-603-019 | MAIN CIRCUIT BOARD |
| BPF1 | ★87-030-136-010 | FILTER BP MB 8L 7.0 |
| C1 | ★87-010-187-019 | CAP,CHIP 5600P B |
| C2 | ★87-010-503-019 | CAP,ELECT GAS 220-4 |
| C3 | ★87-010-196-019 | CAP,CHIP 0.1 |
| C5 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C6 | ★87-010-146-019 | CAP,CHIP 2P CH |
| C7 | ★87-010-166-019 | CAP,CHIP 100P |
| C8 | ★87-010-195-019 | CAP,CHIP 0.068 |
| C9 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C10 | ★87-010-154-019 | CAP,CHIP 10P |
| C11 | ★87-010-154-019 | CAP,CHIP 10P |
| C12 | ★87-010-320-019 | CAP,CHIP S 68P CH |
| C13 | ★87-010-195-019 | CAP,CHIP 0.068 |
| C14 | ★87-010-575-019 | CAP,CHIP 560P UJ |
| C15 | ★87-010-331-019 | CAP,CHIP S 8P UJ |
| C16 | ★87-018-147-019 | CAP,CERA-SOL SS 10P CH |
| C17 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C18 | ★87-012-141-019 | CAP,CHIP S 0.22 |
| C19 | ★87-010-172-019 | CAP,CHIP 330P |
| C20 | ★87-012-141-019 | CAP,CHIP S 0.22 |
| C21 | ★87-010-196-019 | CAP,CHIP 0.1 |
| C22 | ★87-010-195-019 | CAP,CHIP 0.068 |
| C23 | ★87-010-196-019 | CAP,CHIP 0.1 |
| C24 | ★87-010-183-019 | CAP,CHIP B 2700P (K) |
| C25 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C26 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C27 | ★87-010-322-019 | CAP,CHIP S 100P CH |
| C28 | ★87-010-197-019 | CAP,CHIP 0.01DM |

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| C29 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C30 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C31 | ★87-010-496-019 | CAP,ELECT 3.3-50SRE |
| C32 | ★87-010-193-019 | CAP,CHIP 0.033 |
| C33 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C34 | ★87-012-141-019 | CAP,CHIP S 0.22 |
| C35 | ★87-012-141-019 | CAP,CHIP S 0.22 |
| C36 | ★87-010-145-019 | CAP,CHIP S 1P |
| C37 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C38 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C39 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C40 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C41 | ★87-010-172-019 | CAP,CHIP 330P |
| C42 | ★87-012-141-019 | CAP,CHIP S 0.22 |
| C43 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C44 | ★87-012-141-019 | CAP,CHIP S 0.22 |
| C45 | ★87-010-452-019 | CAP,CHIP 1 |
| C46 | ★87-010-503-019 | CAP,ELECT GAS 220-4 |
| C47 | ★87-012-141-019 | CAP,CHIP S 0.22 |
| C50 | ★87-018-123-019 | CAP,CERA-SOL SS 220P |
| C51 | ★87-018-123-019 | CAP,CERA-SOL SS 220P |
| C52 | ★87-018-115-019 | CAP,CERA-SOL SS 47P(HS-T120) |
| C53 | ★87-018-123-019 | CAP,CERA-SOL SS 220P(HS-T150) |
| C54 | ★87-018-131-019 | CAP,CERA-SOL SS 1000P(HS-T150) |
| C101 | ★87-010-177-019 | CAP,CHIP S 820P SL |
| C102 | ★87-010-177-019 | CAP,CHIP S 820P SL |
| C103 | ★87-010-501-019 | CAP,ELECT GAS 47-4 |
| C104 | ★87-010-501-019 | CAP,ELECT GAS 47-4 |
| C105 | ★87-010-198-019 | CAP,CHIP 0.022 |
| C106 | ★87-010-198-019 | CAP,CHIP 0.022 |
| C107 | ★87-010-198-019 | CAP,CHIP 0.022 |
| C108 | ★87-010-198-019 | CAP,CHIP 0.022 |
| C109 | ★87-010-452-019 | CAP,CHIP 1 |
| C110 | ★87-010-452-019 | CAP,CHIP 1 |
| C111 | ★87-010-178-019 | CAP,CHIP 1000P |
| C112 | ★87-010-178-019 | CAP,CHIP 1000P |
| C113 | ★87-010-452-019 | CAP,CHIP 1 |
| C114 | ★87-010-452-019 | CAP,CHIP 1 |
| C115 | ★87-010-174-019 | CAP,CHIP 470P |
| C116 | ★87-010-174-019 | CAP,CHIP 470P |
| C117 | ★87-010-184-019 | CAP,CHIP B 3300P (K) |
| C118 | ★87-010-184-019 | CAP,CHIP B 3300P (K) |
| C119 | ★87-010-503-019 | CAP,ELECT GAS 220-4 |
| C120 | ★87-010-503-019 | CAP,ELECT GAS 220-4 |
| C121 | ★87-010-501-019 | CAP,ELECT GAS 47-4 |
| C122 | ★87-010-503-019 | CAP,ELECT GAS 220-4 |
| C123 | ★87-010-503-019 | CAP,ELECT GAS 220-4 |
| C124 | ★87-010-503-019 | CAP,ELECT GAS 220-4 |
| C125 | ★87-010-188-019 | CAP,CHIP S 6800P |
| C126 | ★87-010-188-019 | CAP,CHIP S 6800P |
| C127 | ★87-010-194-019 | CAP,CHIP 0.047 |
| C128 | ★87-010-194-019 | CAP,CHIP 0.047 |
| C129 | ★87-010-193-019 | CAP,CHIP 0.033 |
| C130 | ★87-010-193-019 | CAP,CHIP 0.033 |
| C131 | ★87-010-214-019 | CAP,TANTALUM 0.68-16 |
| C132 | ★87-010-214-019 | CAP,TANTALUM 0.68-16 |
| C133 | ★87-010-186-019 | CAP,CHIP 4700P |
| C134 | ★87-010-186-019 | CAP,CHIP 4700P |
| C135 | ★87-010-452-019 | CAP,CHIP 1 |
| C136 | ★87-010-452-019 | CAP,CHIP 1 |
| C137 | ★87-010-196-019 | CAP,CHIP 0.1 |
| C138 | ★87-010-501-019 | CAP,ELECT GAS 47-4 |
| C139 | ★87-010-503-019 | CAP,ELECT GAS 220-4 |
| C140 | ★87-010-676-019 | CAP 0.1F |

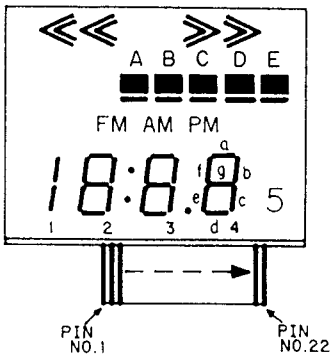
| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| C141 | ★87-010-450-019 | CAP,CHIP 0.47U(HS-T150) |
| C142 | ★87-010-497-019 | CAP,ELECT GAS 4.7-35(HS-T150) |
| C143 | ★87-010-452-019 | CAP,CHIP 1(HS-T150) |
| C144 | ★87-015-934-019 | CAP, CHIP TANTALUM 2.2-4(HS-T150) |
| CF1 | ★87-008-364-019 | CF 450KHZ,CFUM |
| CF2 | ★87-008-384-019 | CF SFT10.7MS23A |
| CF3 | ★87-008-385-019 | CF CDA 10.7MG16A |
| CF4 | ★87-030-154-019 | CERALOCK CSB456F16 |
| CP1 | 87-001-367-019 | PHOTO SENSOR SPI-315(0)CD(HS-T150) |
| D1 | 87-026-435-019 | DIODE,VAR KV1560 |
| D2 | 87-026-359-019 | DIODE,VAR KV1410 |
| D3 | 87-026-359-019 | DIODE,VAR KV1410 |
| J1 | 87-009-022-019 | JACK DC LONG(DC 3V) |
| J2 | 87-049-861-019 | JACK 3.5ST 2.5MM BK(PHONES) |
| L1 | ★87-003-105-019 | COIL 0.22UH |
| L3 | ★84-469-610-019 | COIL RF FM Y |
| L4 | ★84-469-607-019 | COIL OSC FM Y |
| L5 | ★87-003-226-010 | MICRO INDUCTOR 100UJ |
| L6 | ★87-008-386-019 | IFT AM |
| L7 | ★87-008-390-019 | IFT FM |
| L101 | ★87-003-098-019 | COIL (LA02) 2.2 UH |
| L102 | ★87-003-098-019 | COIL (LA02) 2.2 UH |
| L103 | ★87-003-097-010 | COIL 1.0UH (S) |
| LED1 | 87-020-520-019 | LED TLR-226(OPERATION/BATT) |
| S1 | 87-031-816-019 | SLIDE SW(FM MODE)(HS-T150) |
| S101 | 87-031-816-019 | SLIDE SW(TAPE SELECTOR) |
| S102 | 87-031-816-019 | SLIDE SW(DOLBY NR) |
| S103 | 87-036-127-019 | SLIDE SW(FUNCTION) |
| S104 | 87-036-083-019 | PUSH SWITCH(POWER) |
| SFR1 | ★87-024-148-010 | SFR 100K |
| SFR101 | ★87-024-069-010 | SFR 300 |
| SFR102 | ★87-024-069-010 | SFR 300 |
| TC1 | ★87-011-155-019 | TRIMMER CERAMIC 10P |
| TC2 | ★87-011-155-019 | TRIMMER CERAMIC 10P |
| TC3 | ★87-011-216-010 | TRIMMER 4P |
| VR1 | 87-024-123-019 | VOLUME 2GANG 20KA(VOLUME) |

=== CONTROL CIRCUIT BOARD SECTION ===

| | | |
|---|---|---|
| PCB-B | * | CONTROL CIRCUIT BOARD |
| C201 | ★87-010-505-019 | CAP,CHIP TANTALUM 1U |
| C202 | ★87-010-198-019 | CAP,CHIP 0.022 |
| C203 | ★87-010-322-019 | CAP,CHIP S 100P CH(HS-T150) |
| C203 | ★87-010-169-089 | CAP,CHIP 180P(HS-T120) |
| C204 | ★87-010-197-019 | CAP,CHIP 0.01DM |
| C205 | ★87-010-452-019 | CAP,CHIP 1U |
| C206 | ★87-010-180-019 | CAP,CHIP 1500P |
| C207 | ★87-010-154-019 | CAP CHIP 10P |
| C208 | ★87-010-170-019 | CAP,CHIP 220P |
| C209 | ★87-010-196-019 | CAP,CHIP 0.1 |
| C210 | ★87-010-169-019 | CAP,CHIP 180P |
| C211 | ★87-010-452-019 | CAP,CHIP 1U |
| C212 | ★87-010-316-019 | CAP,CHIP S 33P CH |
| C213 | ★87-010-196-019 | CAP,CHIP 0.1 |
| C214 | ★87-010-196-019 | CAP,CHIP 0.1 |
| C215 | ★87-010-196-019 | CAP,CHIP 0.1 |
| C216 | ★87-010-452-019 | CAP,CHIP 1U |
| C217 | ★87-012-142-019 | CAP,CHIP 0.33 |
| C218 | ★87-010-424-019 | CAP,CHIP TANTALUM 4.7-4 |
| L201 | ★87-007-247-010 | COIL CHIP DD CONV |
| LCD1 | 84-462-604-010 | LCD HS ASSY |
| S201 | 87-031-988-019 | SLIDE SW(BAND SELECTOR) |
| S202 | 87-030-152-019 | TACT SWITCH(TUNING/TIME,UP/HOUR) |
| S203 | 87-030-152-019 | TACT SWITCH(TUNING/TIME,DOWN/MIN) |
| S204 | 87-030-152-019 | TACT SWITCH(MEMORY) |

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| S205 | 87-030-152-019 | TACT SWITCH(STORE/SET) |
| S206 | 87-031-988-019 | SLIDE SW(HOLD)(HS-T150) |
| TC201 | ★87-011-192-019 | TRIMMER,CHIP CTZ30C |
| X1 | ★87-030-121-019 | CRYSTAL DT-38 75K |
| ☰☰ MOTOR CIRCUIT BOARD SECTION ☰☰ | | |
| PCB-C | * | MOTOR CIRCUIT BOARD |
| C301 | ★87-015-933-019 | CAP,CHIP TANTALUM 1-10 |
| C302 | ★87-015-934-019 | CAP, CHIP TATALUM 2.2-4 |
| R303 | ★87-022-043-010 | RES,CHIP M,M/F 8.2K 1/8W |
| R308 | ★87-022-042-010 | RES,CHIP M,M/F 0.51 1/8W |
| SFR301 | ★87-024-076-010 | SFR 1K |
| ☰☰ CONNECT CIRCUIT BOARD SECTION ☰☰ | | |
| PCB-D | ★84-468-611-010 | CONNECT CIRCUIT BOARD |
| ☰☰ HEAD CIRCUIT BOARD SECTION ☰☰ (HS-T150 ONLY) | | |
| PH | 84-469-613-010 | PH ASSY(W/PCB-E) |
| S105 | 86-541-602-010 | SLIDE SW(DIRECTION) |
| ☰☰ MISCELLANEOUS ☰☰ | | |
| L2 | ★84-469-619-019 | COIL BAR ANT AM |
| M1 | 87-045-295-019 | MOTOR,HKN-3A 3LA(HS-T150) |
| M1 | 87-045-292-019 | MOTOR,HKN-3A 3RC(HS-T120) |
| PH | 86-553-221-019 | PH(HS-T120) |

LCD 1
LCD
DISPLAY




| PIN NO. | COM.1 | COM.2 |
|---|---|---|
| 1 | | COM 2 |
| 2 | B | A |
| 3 | D | C |
| 4 | — | E |
| 5 | FM | 1 |
| 6 | 2b | 2f |
| 7 | 2g | 2e |
| 8 | 2c | 2d |
| 9 | 2a | AM |
| 10 | 3d | 3f |
| 11 | 3g | 3e |
| 12 | 3c | 3d |
| 13 | 3a | • • |
| 14 | 4b | 4f |
| 15 | 4g | 4e |
| 16 | 4c | 4d |
| 17 | 4a | PM |
| 18 | | 5 |
| 19 | • | RIGHT SIDE ≫ |
| 20 | LEFT SIDE ≫ | |
| 21 | RIGHT SIDE ≪ | LEFT SIDE ≪ |
| 22 | COM 1 | |

**HS-T150**

**Combination Circuit Board** **84-469-617-010**

**PCB-B** **84-469-604-010**

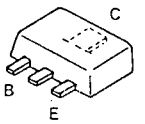
**PCB-C** **84-469-618-010**

**HS-T120**

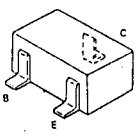
**Combination Circuit Board** **84-475-603-019**

**PCB-B** **84-475-601-019**

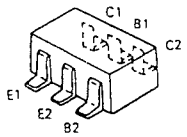
**PCB-C** **84-475-601-019**



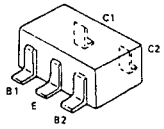

**2SA1213**



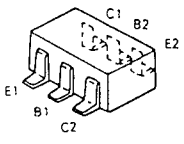

**2SA1162**
**2SC2712**
**2SC2714**
**DTA124**
**DTC143**



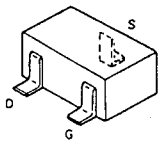

**IMB6**
**IMH7**



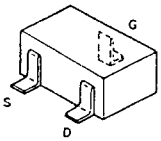

**FMG4**
**FMW1**




**IMD3**
**IMB3**
**IMD6**

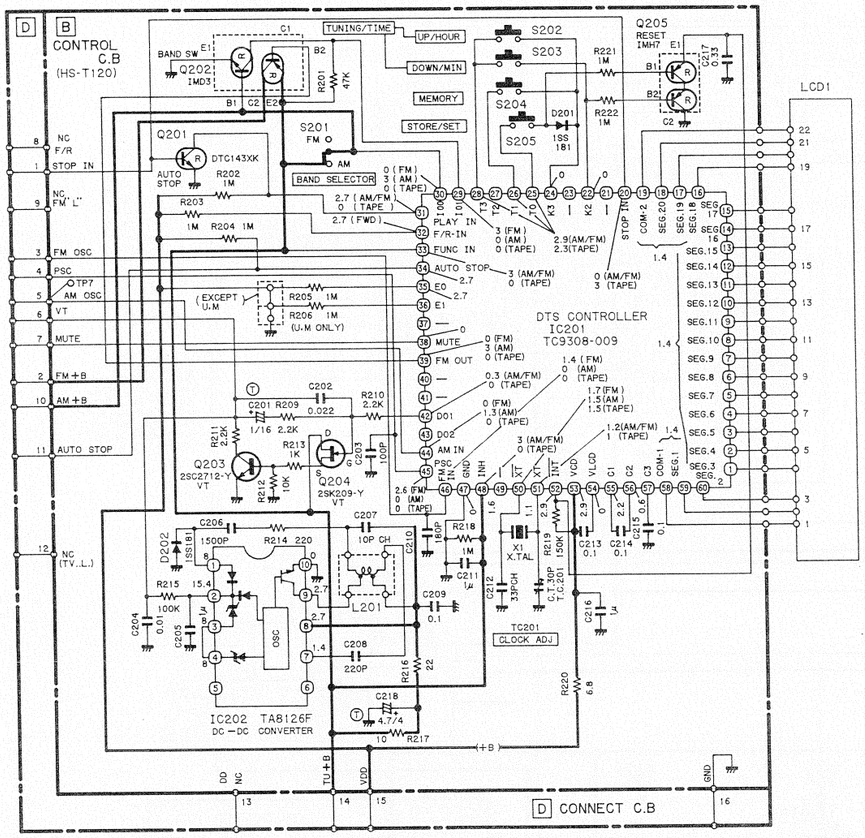



**2SK211**



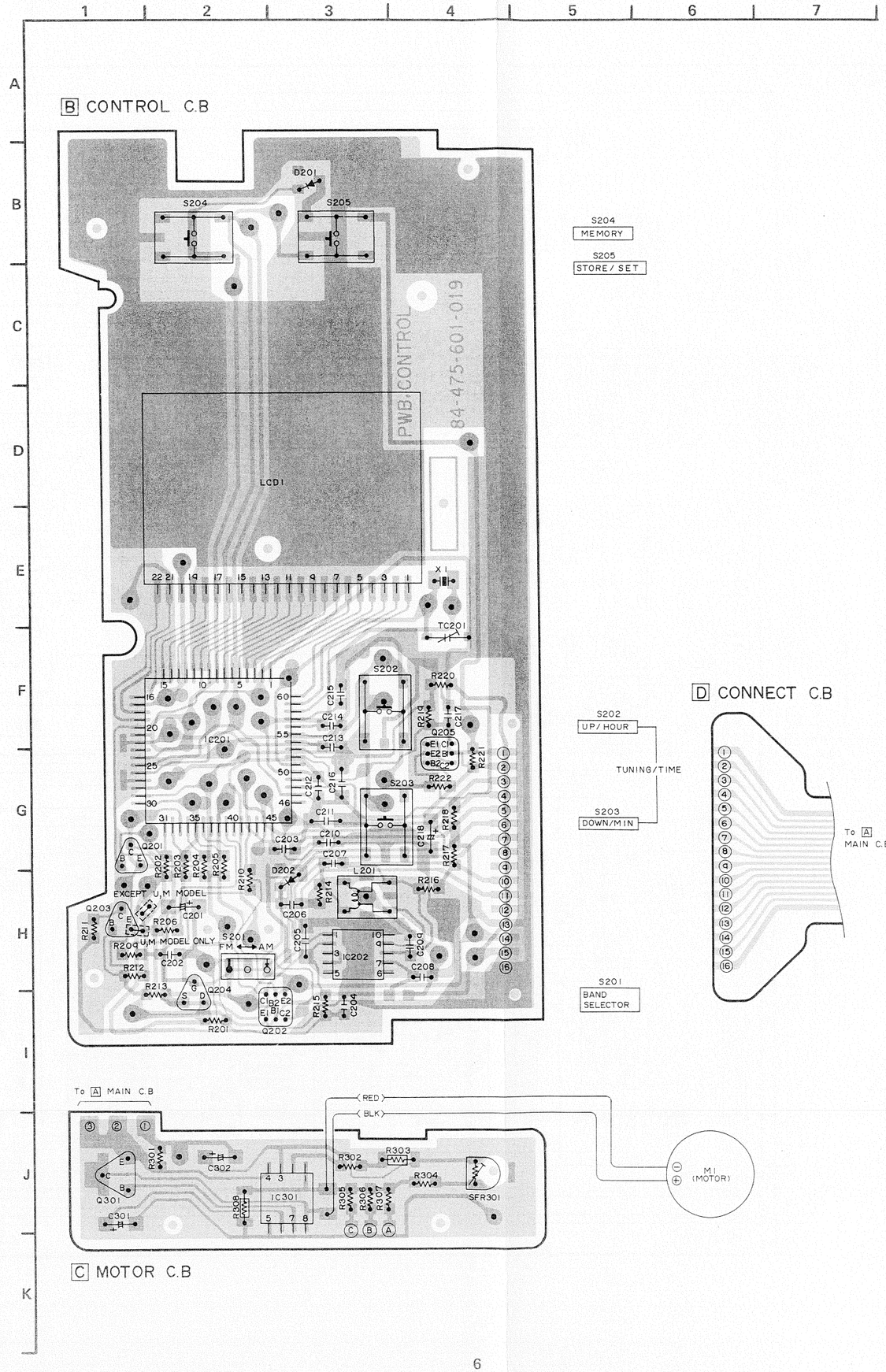

**2SK209**

# SCHEMATIC DIAGRAM—1 (HS-T120)

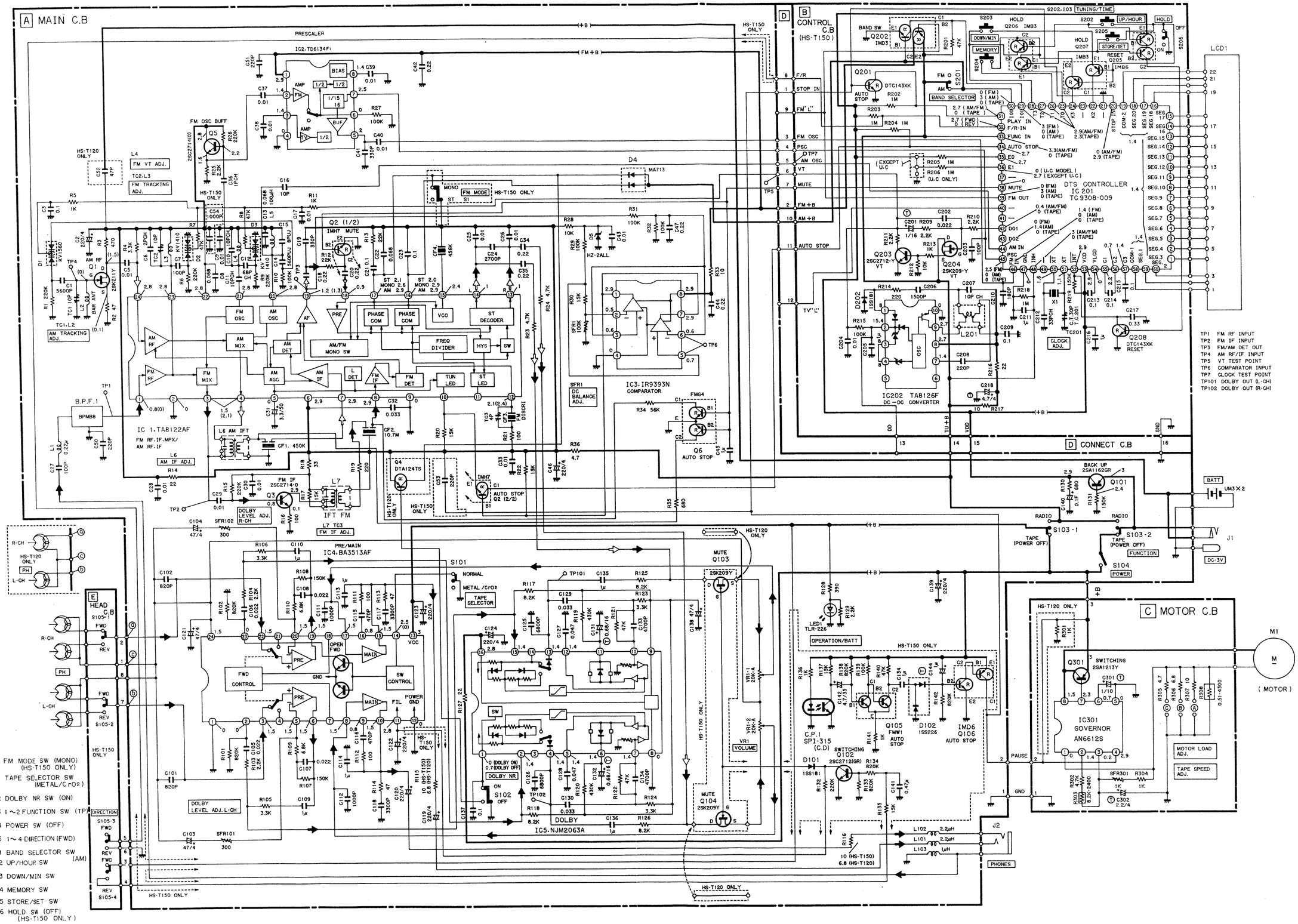


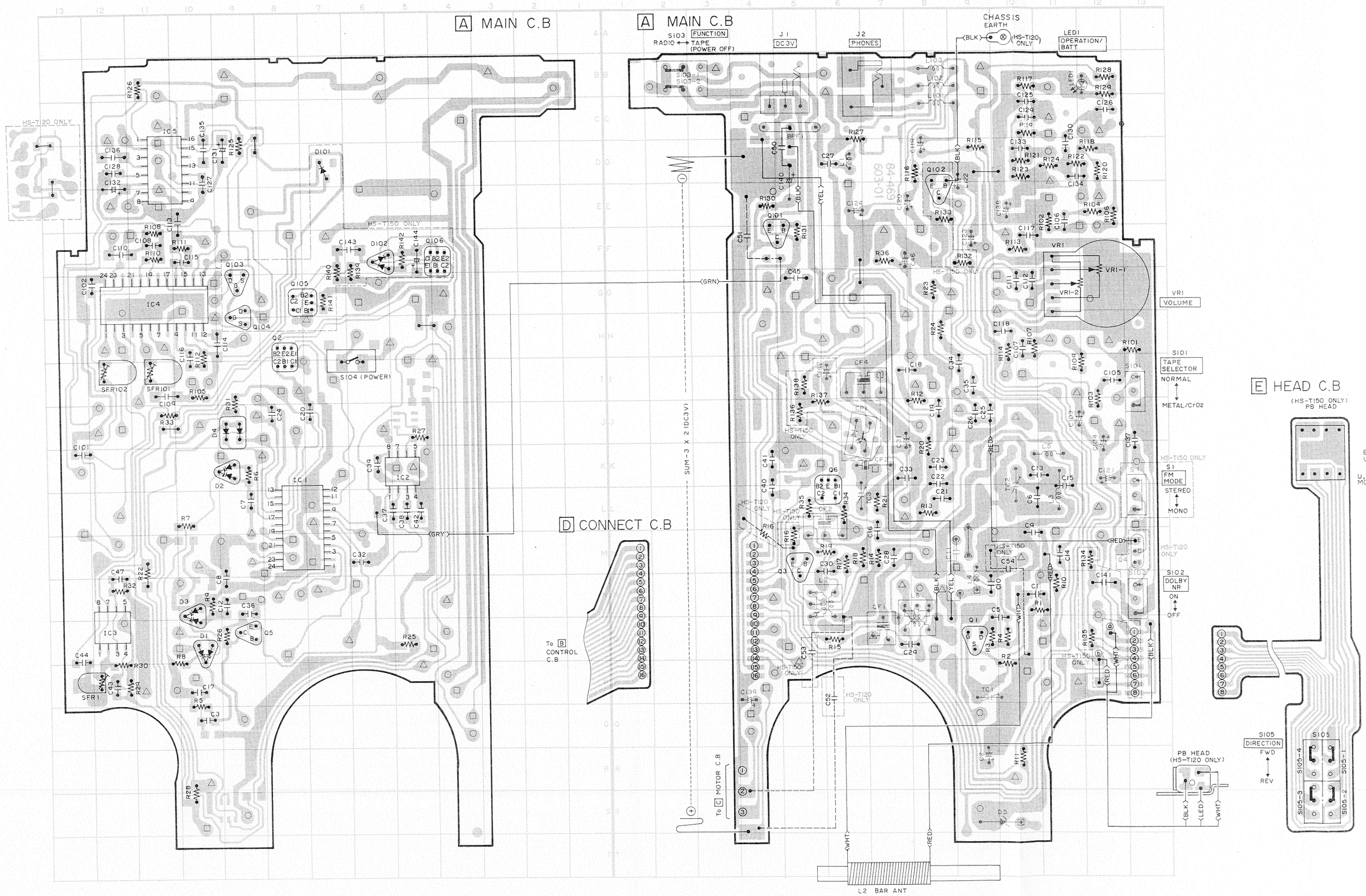


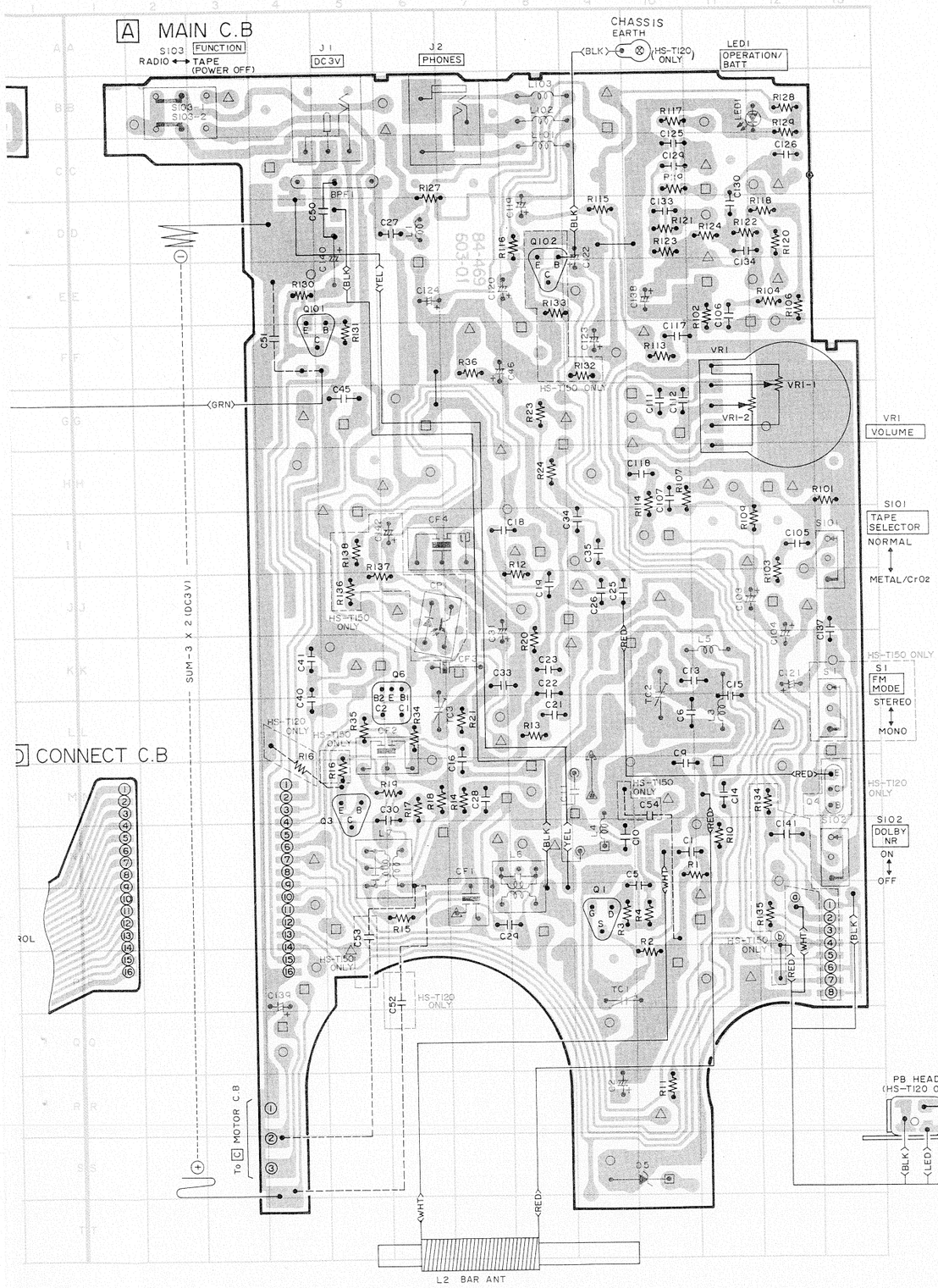

# WIRING—1 (HS-T120)



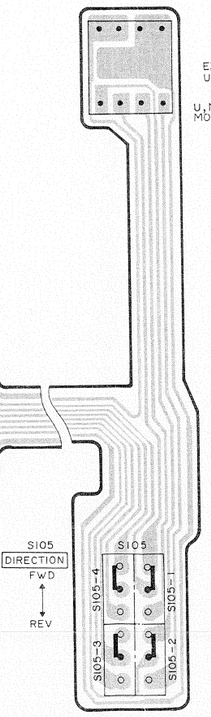
# SCHEMATIC DIAGRAM—2

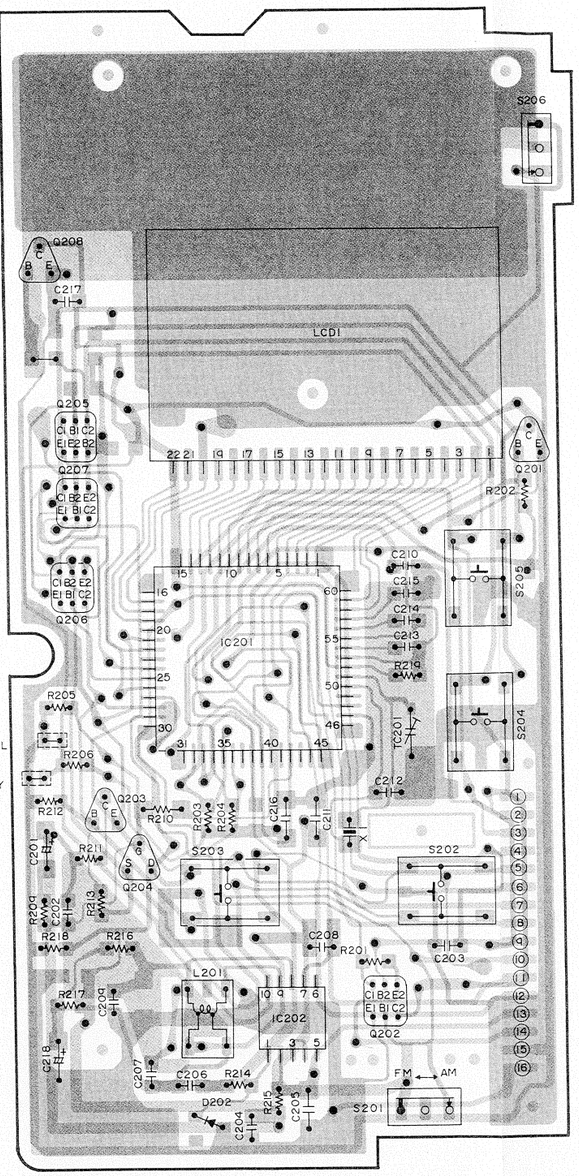


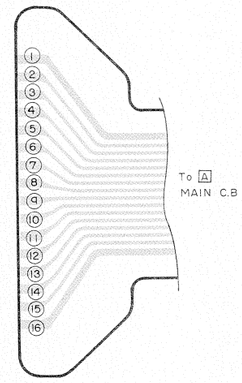

A MAIN C.B
A MAIN C.B
D CONNECT C.B
E HEAD C.B
(HS-T150 ONLY)
PB HEAD
CHASSIS EARTH
(BLK)
(HS-T120 ONLY)
LED1
OPERATION/ BATT
S103 FUNCTION
RADIO ↔ TAPE (POWER OFF)
J1 DC3V
J2 PHONES
VR1 VOLUME
S101 TAPE SELECTOR
NORMAL
METAL/CrO2
S1 FM MODE
STEREO
MONO
S102 DOLBY NR
ON
OFF
S105 DIRECTION
FWD
REV
PB HEAD (HS-T120 ONLY)
S104 (POWER)
SFR101
SFR102
SFR1
HS-T120 ONLY
HS-T150 ONLY
IC1
IC2
IC3
IC4
IC5
Q1
Q2
Q3
Q4
Q5
Q6
Q101
Q102
D1
D2
D3
D4
D5
D101
D102
L1
L2
L3
L4
L5
L2 BAR ANT
To B CONTROL C.B
To C MOTOR C.B
SUM-3 X 2 (DC3V)
(GRN)
(GRY)
(YEL)
(BLK)
(RED)
(WHT)
(BLU)
84 469 603 01

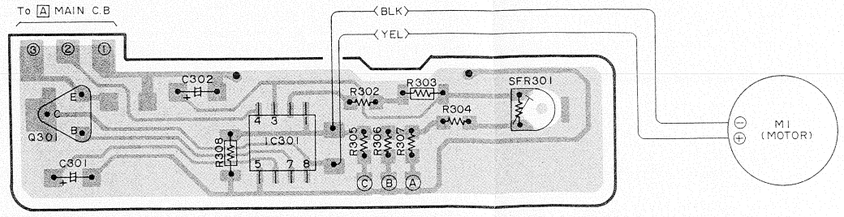

A MAIN C.B
S103 FUNCTION
RADIO ↔ TAPE (POWER OFF)
J1 DC3V
J2 PHONES
CHASSIS EARTH
(BLK)
(HS-T120 ONLY)
LED1 OPERATION/ BATT
VR1 VOLUME
S101 TAPE SELECTOR
NORMAL
METAL/CrO2
S1 FM MODE
STEREO
MONO
S102 DOLBY NR
ON
OFF
HS-T150 ONLY
HS-T120 ONLY
SUM-3 X 2 (DC3V)
(GRN)
(BLK)
(YEL)
(RED)
(WHT)
To C MOTOR C.B
L2 BAR ANT
PB HEAD (HS-T120 ONLY)
(BLK)
(LED)
(WHT)

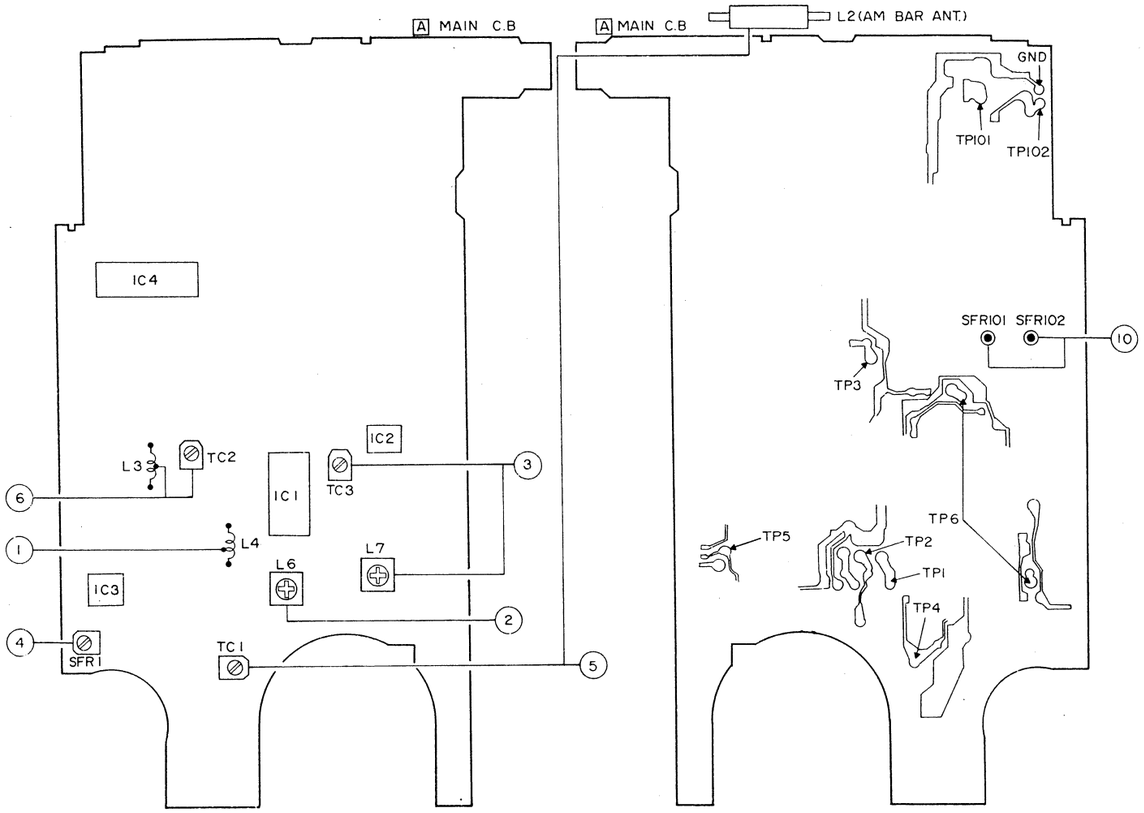

D CONNECT C.B

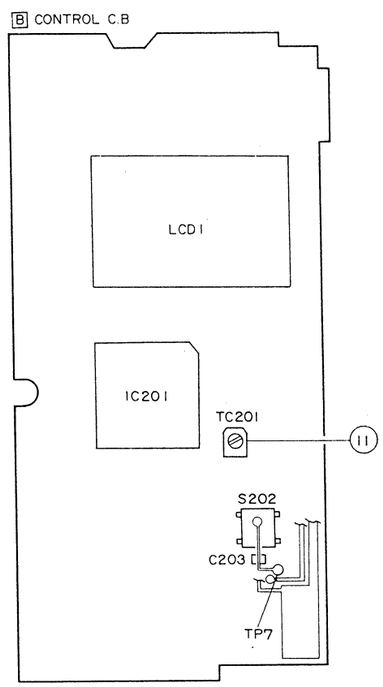

E HEAD C.B
(HS-T150 ONLY)
PB HEAD
EXCEPT U,M MODEL
U,M MODEL ONLY
S105 DIRECTION
FWD
REV

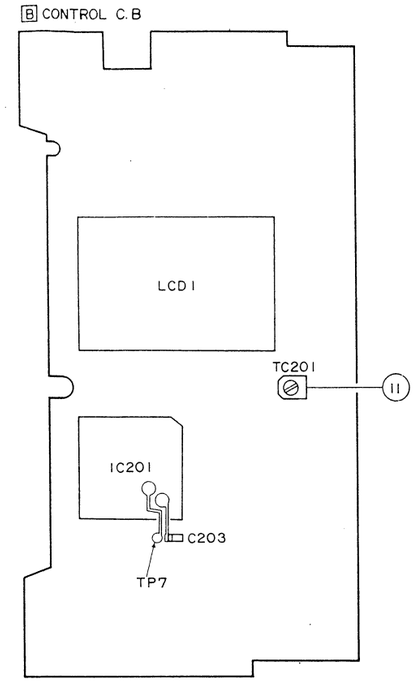

B CONTROL C.B
S206 HOLD
ON
OFF
LCD1
S205 STORE/SET
S204 MEMORY
S203 DOWN/MIN
TUNING/TIME
S202 UP/HOUR
S201 BAND SELECTOR
FM ↔ AM

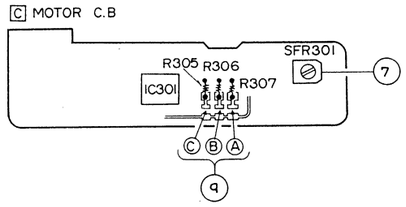

D CONNECT C.B
To A MAIN C.B


To A MAIN C.B
(BLK)
(YEL)
M1 (MOTOR)
C MOTOR C.B




1. FM VT Adjustment
   Settings : · Test point : TP5
   · Adjustment location : L4
   Method : Tune to FM 108.1MHz(U,M model), FM 108MHz (Except U,M model) and adjust L4 so the voltage at TP5 is 9.0±0.05V. After adjustment is completed, check that it is 1.0V or more at TP5 with the FM 87.5MHz signal.

2. AM IF Adjustment
   L6 · · · · · · · · · · · · · · · 450kHz

3. FM IF Adjustment
   L7,TC3 · · · · · · · · · · · · · 10.7MHz

4. DC BALANCE Adjustment
   Settings : · Input signal : 87.5MHz, 54dB
   · Test point : TP6
   · Adjustment location : SFR1
   Method : Adjust SFR1 so the voltage at TP6 is 0±10mV.

5. AM Tracking Adjustment
   L2 · · · · · · · · · · · · 600kHz(U,M model)
   603kHz(Except U,M model)
   TC1 · · · · · · · · · · · · 1400kHz(U,M model)
   1395kHz(Except U,M model)

6. FM Tracking Adjustment
   L3 · · · · · · · · · · · · · 87.5MHz
   TC2 · · · · · · · · · · · · 108.1MHz(U,M model)
   108.0MHz(Except U,M model)

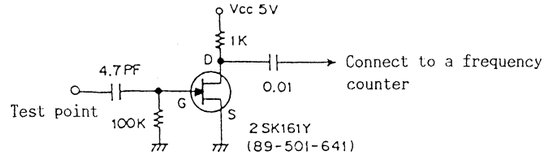
7. Tape Speed Adjustment
   Settings : · Test tape : TTA-100(TTA-111S)
   · Adjustment location : SFR301
   Method : Play back the test tape, adjust for 3000Hz.

8. Azimuth Adjustment
   Settings : · Test tape : TTS-320(TTA-113B,TCC152)
   · Adjustment location : Azimuth adjustment screw
   Method : Play back the 8kHz signal of the test tape, and adjust so that the output becomes maximum.

9. Motor Load Adjustment
   Refer to the service manual of HS-T23.T230/HS-T26.T260.

10. Dolby Level Adjustment
    Settings : · Test tape : TTS-200(TTA-161,TCC-130)
    · Test point : TP101(Lch), TP102(Rch)
    · Adjustment location : SFR101(Lch)
    SFR102(Rch)
    Method : Adjust SFR1(102) so the voltage at TP101(102) is 100mV±5mV.

11. Clock Adjustment
    Settings : · Test point : TP7
    · BAND SW : AM 1610kHz(U,M model)
    1611kHz(Except U,M model)
    · Adjustment location : TC201
    Method : · Connect a buffer to TP7. Adjust TC201 so the frequency at TP7 is 2060kHz±10Hz(U,M model), 2061kHz±10Hz(Except U,M model).








PRACTIC

<Radio Blo
Sensitivity
(THD, 3%)

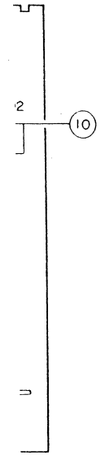
(S/N 10dB)

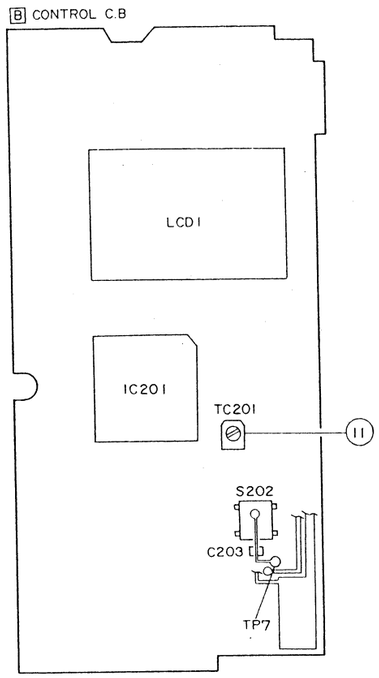
Intermediat

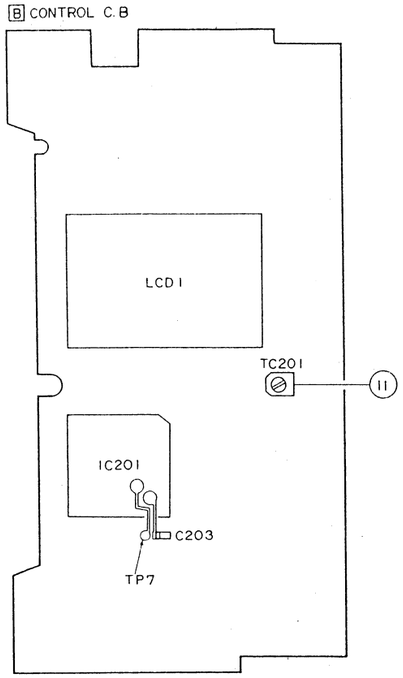
FM stereo s

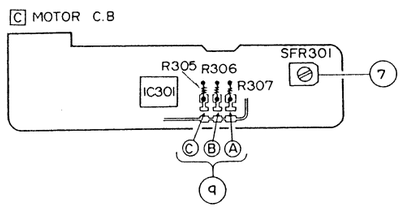
<Tape Bloc
S/N ratio :
Distortion
Noise level
Wow & flutt

Pinch rolle
Forward tor
FF/Rewind t
Back tensic




9. Motor Load Adjustment
Refer to the service manual of HS-T23.T230/HS-T26.T260.

1)

10. Dolby Level Adjustment

1)

Settings : · Test tape : TTS-200(TTA-161,TCC-130)
· Test point : TP101(Lch), TP102(Rch)
· Adjustment location : SFR101(Lch)
SFR102(Rch)

el)

Method : Adjust SFR1(102) so the voltage at TP101(102) is 100mV±5mV.

Hz.

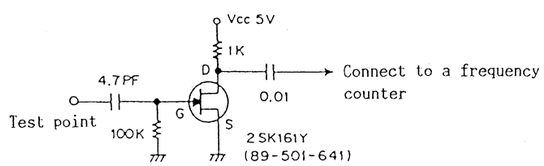
11. Clock Adjustment

Settings : · Test point : TP7
· BAND SW : AM 1610kHz(U,M model)
1611kHz(Except U,M model)
· Adjustment location : TC201

ent

Method : · Connect a buffer to TP7. Adjust TC201 so the frequency at TP7 is 2060kHz±10Hz(U,M model), 2061kHz±10Hz(Except U,M model).

pe,
ximum.






## PRACTICAL SERVICE FIGURE

<Radio Block>

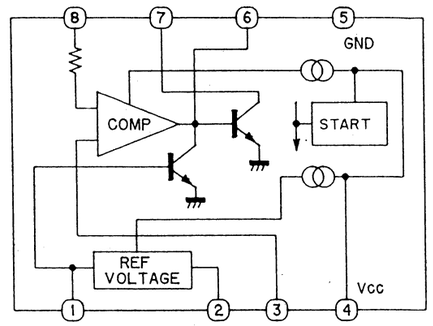
| | |
|---|---|
| Sensitivity : | |
| (THD, 3%) | FM 16±4dB (98MHz)(EXCEPT U,M) |
| | FM 16±4dB (98.1MHz)(U,M ONLY) |
| (S/N 10dB) | AM 51±4dB (999kHz)(EXCEPT U,M) |
| | AM 51±4dB (1,000kHz)(U,M ONLY) |
| Intermediate frequency : | FM 10.7MHz |
| | AM 450kHz |
| FM stereo separation : | 20±5dB (1kHz) |

<Tape Block>

| | |
|---|---|
| S/N ratio : | 50±3dB |
| Distortion : | Less than 3% |
| Noise level : | Less than 3.5mV (DC VOL max.) |
| Wow & flutter : | Less than 0.45% (FWD) RMS |
| | Less than 0.48% (REV) RMS |
| Pinch roller press : | 135±15g (FWD), 125±15g (REV) |
| Forward torque : | $30^{+10}_{-5}$g-cm (FWD, REV) |
| FF/Rewind torque : | $90^{+30}_{-20}$g-cm |
| Back tension : | 2~3.5g-cm |

## IC BLOCK DIAGRAM

IC, AN6612S




## IC DESCRIPTION

IC, AN6612S

| Pin No. | Pin Name | Description |
|---|---|---|
| 1 | VRN | Input terminal for motor current detection |
| 2 | VRP | Output terminal for reference voltage |
| 3 | VIN | Output terminal for reference voltage control |
| 4 | VCC | Power supply terminal |
| 5 | GND | GND terminal |
| 6 | VB | Terminal for prevention of oscillation |
| 7 | VBO | Output terminal for the motor speed of control |
| 8 | VM | Input terminal for the motor speed of detection |

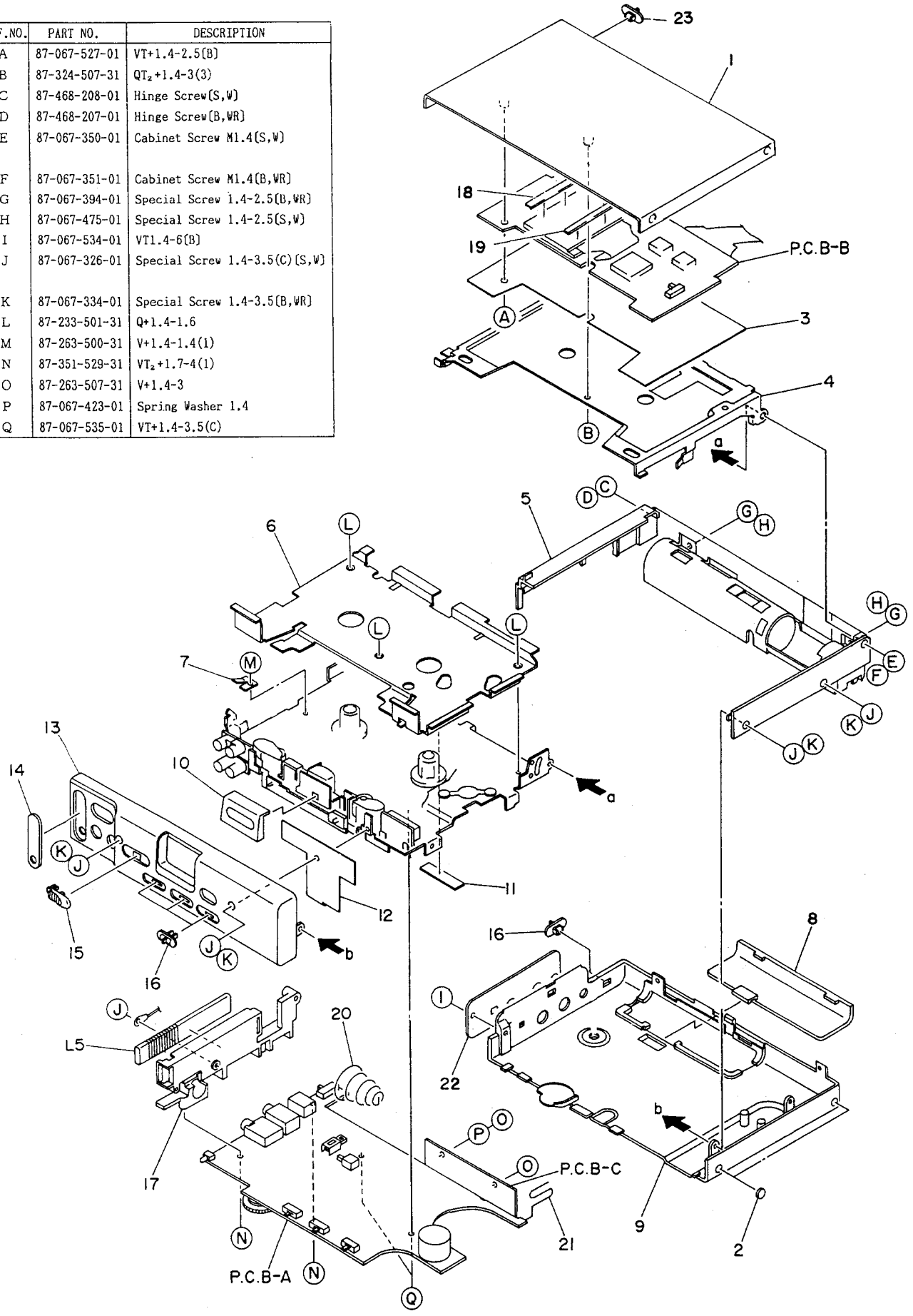
## IC DESCRIPTION

1. IC,9308F-009

| Pin No. | Pin Name | Description | | | |
|---|---|---|---|---|---|
| 58 | COM 1 | Common output terminal | | | LCD drive output terminal |
| 19 | COM 2 | Common output terminal | | | |
| 59, 60<br>1~18 | $S_1$~$S_{20}$ | Segment output terminal | | | |
| 20 | STOP IN | Goes high during motor rotation.<br>Goes low when motor stops. | | | Display input terminal |
| 21 | —— | Not used. | | | |
| 31 | PLAY IN | Mechanism head-up operation.<br>Goes low when motor is turned on. | | | |
| 32 | F/R-IN | Goes high in FWD mode.<br>Goes low in REV mode. | | | |
| 22 | $K_2$ | —— | —— | DOWN | Key matrix |
| 24 | $K_3$ | UP | MEMORY | STORE | |
| 25 | $T_0$ | H | L | L | |
| 26 | $T_1$ | L | H | L | |
| 27 | $T_2$ | L | L | L | |
| 28 | $T_3$ | L | L | H | |
| 29, 30 | $I_{01}$ $I_{00}$ | $I_{01}$ / $I_{00}$ / Mode: H / L / AM; L / H / FM | | | Band select termnal. |
| 33 | FUNC IN | Goes high in RADIO mode. | | | |
| 34 | AUTO STOP | Goes low when a signal is received during AM/FM AUTO tuning. | | | |
| 35<br>36 | $E_0$<br>$E_1$ | Bandwidth/tuning step select terminal. | | Y, $Y_1$, YZ | YU, MY |
| | | | $E_0$ | H | H |
| | | | $E_1$ | H | L |
| 37 | —— | Not used. | | | |
| 38 | Mute | Mute output terminal. Muted in high level. | | | |
| 39 | FM OUT | Outputs a high signal when the band switch is set to FM. | | | |
| 40 | —— | Not used. | | | |
| 41 | —— | Not used. | | | |
| 42, 43 | $D_{01}$, $D_{02}$ | Phase detector's error output terminal. A pulse is output to LPF. | | | |
| 44 | AM IN | AM OSC input terminal | | | |
| 45 | PSC | PSC output terminal | | | |
| 46 | FM IN | Prescaler OUT input terminal | | | |
| 48 | INH | PLL is activated when high.<br>PLL is stopped when low (backup mode). | | | |
| 50, 51 | $\overline{XT}$, XT | Used to connect crystal oscillator. | | | |
| 52 | $\overline{INT}$ | Initialize terminal. Initialized and set to the initial value when low.<br>Memory is then cleared. | | | |
| 53 | $V_{DD}$ | Power supply connection terminal | | | |
| 54 | VLCD | LCD step-up power supply | | | |
| 55~57 | $C_1$~$C_3$ | Capacitor connection terminal for LCD step-up power supply | | | |

## EXPLODED VIEW－1

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| A | 87-067-527-01 | VT+1.4-2.5(B) |
| B | 87-324-507-31 | $QT_2$+1.4-3(3) |
| C | 87-468-208-01 | Hinge Screw(S,W) |
| D | 87-468-207-01 | Hinge Screw(B,WR) |
| E | 87-067-350-01 | Cabinet Screw M1.4(S,W) |
| F | 87-067-351-01 | Cabinet Screw M1.4(B,WR) |
| G | 87-067-394-01 | Special Screw 1.4-2.5(B,WR) |
| H | 87-067-475-01 | Special Screw 1.4-2.5(S,W) |
| I | 87-067-534-01 | VT1.4-6(B) |
| J | 87-067-326-01 | Special Screw 1.4-3.5(C)(S,W) |
| K | 87-067-334-01 | Special Screw 1.4-3.5(B,WR) |
| L | 87-233-501-31 | Q+1.4-1.6 |
| M | 87-263-500-31 | V+1.4-1.4(1) |
| N | 87-351-529-31 | $VT_2$+1.7-4(1) |
| O | 87-263-507-31 | V+1.4-3 |
| P | 87-067-423-01 | Spring Washer 1.4 |
| Q | 87-067-535-01 | VT+1.4-3.5(C) |

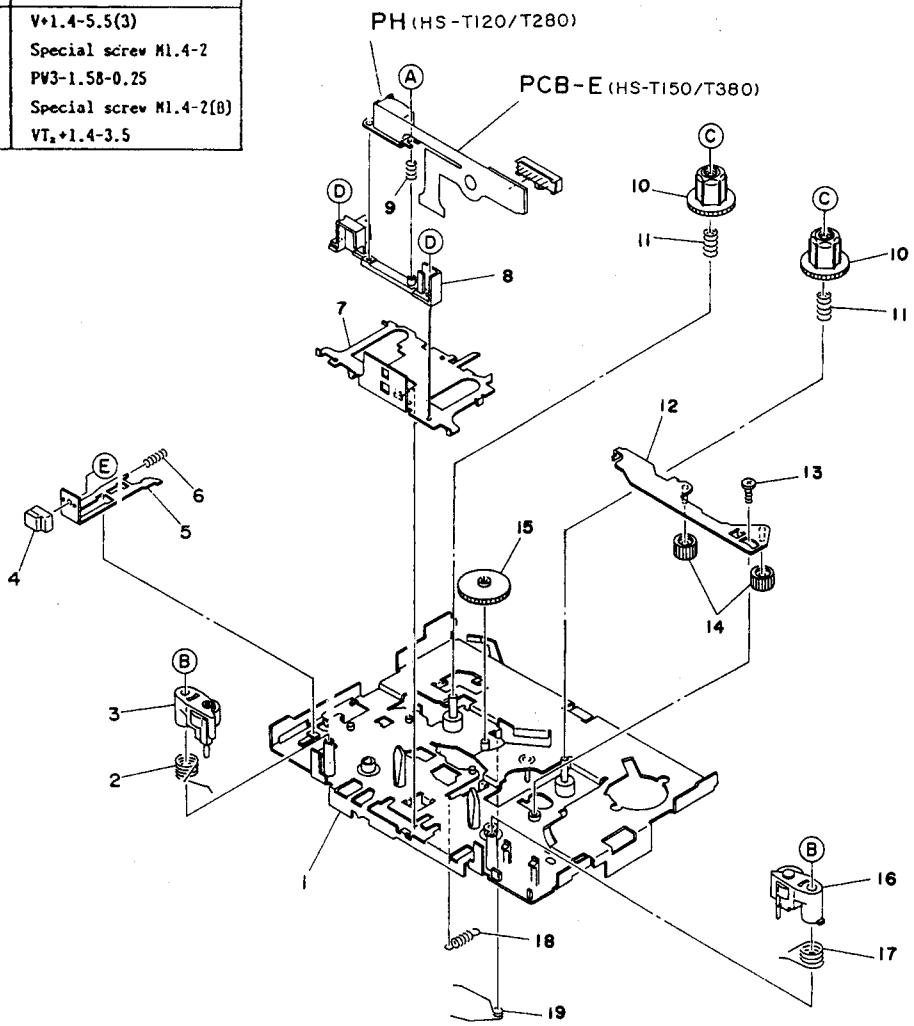


# MECHANICAL PARTS LIST

| PART NO. CHANGED TO | REF. NO. | PART NO. | DESCRIPTION | COMMON MODEL | Q, TY |
|---|---|---|---|---|---|
| | 1-1 | 09-027-638-010 | LID CASSETTE ASSY(B)(HS-T150,T380) | * | 1 |
| | 1-1 | 09-027-637-010 | LID CASSETTE ASSY(S)(HS-T150) | * | 1 |
| | 1-1 | 09-027-639-010 | LID CASSETTE ASSY(W)(HS-T150,T380) | * | 1 |
| | 1-1 | 09-027-640-010 | LID CASSETTE ASSY(WR)(HS-T150) | * | 1 |
| | 1-1 | 09-027-644-010 | LID CASSETTE ASSY(B)(HS-T120,T280) | * | 1 |
| | 1-1 | 09-027-643-010 | LID CASSETTE ASSY(S)(HS-T120,T280) | * | 1 |
| | 1-1 | 09-027-645-010 | LID CASSETTE ASSY(W)(HS-T120,T280) | * | 1 |
| | 1-1 | 09-027-646-010 | LID CASSETTE ASSY(WR)(HS-T120) | * | 1 |
| | 1-2 | ★84-448-010-019 | FOOT RUBBER | HS-J360 | 1 |
| | 1-3 | ★84-468-211-019 | INSULATION SHEET | HS-J150 | 1 |
| | 1-4 | ★84-468-201-019 | HOLDER CASSETTE ASSY | HS-J150 | 1 |
| | 1-5 | ★84-468-038-019 | FRAME,CENTER(B)(HS-T150,T380) | HS-J150 | 1 |
| | 1-5 | ★84-468-038-019 | FRAME,CENTER(S,WR)(HS-T150) | HS-J150 | 1 |
| | 1-5 | ★84-468-005-019 | FRAME,CENTER(W)(HS-T150,T380) | HS-J150 | 1 |
| | 1-5 | ★84-475-042-019 | FRAME,CENTER(B,S)(HS-T120,T280) | * | 1 |
| | 1-5 | ★84-475-042-019 | FRAME,CENTER(WR)(HS-T120) | * | 1 |
| | 1-5 | ★84-475-007-019 | FRAME,CENTER(W)(HS-T120,T280) | * | 1 |
| | 1-6 | ★84-468-014-119 | PLATE,DECORATIVE | HS-J150 | 1 |
| | 1-7 | ★84-463-209-010 | P-SPRING,POP UP | HS-PX20 | 1 |
| | 1-8 | 84-468-057-019 | LID,BATTERY(B) | HS-J150 | 1 |
| | 1-8 | 84-468-058-019 | LID,BATTERY(S) | HS-J150 | 1 |
| | 1-8 | 84-468-013-019 | LID,BATTERY(W) | HS-J150 | 1 |
| | 1-8 | 84-468-059-019 | LID,BATTERY(WR) | HS-J150 | 1 |
| | 1-9 | ★84-469-023-019 | CABINET REAR ASSY(B)(HS-T150 Y) | * | 1 |
| | 1-9 | ★84-469-026-019 | CABINET REAR ASSY(B)(HS-T380 YU) | * | 1 |
| | 1-9 | ★84-469-028-019 | CABINET REAR ASSY(B)(HS-T150 MY) | * | 1 |
| | 1-9 | ★84-469-044-019 | CABINET REAR ASSY(B)(HS-T150 YJ1) | * | 1 |
| | 1-9 | ★84-469-047-019 | CABINET REAR ASSY(B)(HS-T150 MYJ) | * | 1 |
| | 1-9 | ★84-469-025-019 | CABINET REAR ASSY(S)(HS-T150 Y,YZ) | * | 1 |
| | 1-9 | ★84-469-024-019 | CABINET REAR ASSY(W)(HS-T150 Y,Y1) | * | 1 |
| | 1-9 | ★84-469-027-019 | CABINET REAR ASSY(W)(HS-T380 YU) | * | 1 |
| | 1-9 | ★84-469-045-019 | CABINET REAR ASSY(W)(HS-T150 YJ1) | * | 1 |
| | 1-9 | ★84-469-029-019 | CABINET REAR ASSY(WR)(HS-T150 Y1) | * | 1 |
| | 1-9 | ★84-469-046-019 | CABINET REAR ASSY(WR)(HS-T150 YJ1) | * | 1 |
| | 1-9 | ★84-475-011-019 | CABINET REAR ASSY(B)(HS-T120 Y) | * | 1 |
| | 1-9 | ★84-475-014-019 | CABINET REAR ASSY(B)(HS-T280 YU) | * | 1 |
| | 1-9 | ★84-475-017-019 | CABINET REAR ASSY(B)(HS-T120 MY) | * | 1 |
| | 1-9 | ★84-475-034-019 | CABINET REAR ASSY(B)(HS-T120 YJ1) | * | 1 |
| | 1-9 | ★84-475-036-019 | CABINET REAR ASSY(B)(HS-T120 MYJ) | * | 1 |
| | 1-9 | ★84-475-012-019 | CABINET REAR ASSY(S)(HS-T120 Y) | * | 1 |
| | 1-9 | ★84-475-015-019 | CABINET REAR ASSY(S)(HS-T280 YU) | * | 1 |
| | 1-9 | ★84-475-003-019 | CABINET REAR ASSY(W)(HS-T120 Y) | * | 1 |
| | 1-9 | ★84-475-013-019 | CABINET REAR ASSY(W)(HS-T280 YU) | * | 1 |
| | 1-9 | ★84-475-033-019 | CABINET REAR ASSY(W)(HS-T120 YJ1) | * | 1 |
| | 1-9 | ★84-475-016-019 | CABINET REAR ASSY(WR)(HS-T120 YZ) | * | 1 |
| | 1-9 | ★84-475-035-019 | CABINET REAR ASSY(WR)(HS-T120 YJ1) | * | 1 |
| | 1-10 | ★84-468-042-019 | PUSH-BUTTON,PLAY(B) | HS-J150 | 1 |
| | 1-10 | ★84-468-043-019 | PUSH-BUTTON,PLAY(S) | HS-J150 | 1 |
| | 1-10 | ★84-468-008-019 | PUSH-BUTTON,PLAY(W) | HS-J150 | 1 |
| | 1-10 | ★84-468-044-019 | PUSH-BUTTON,PLAY(WR) | HS-J150 | 1 |
| | 1-11 | ★84-468-212-019 | MYLAR 20X6 | HS-J150 | 1 |
| | 1-12 | ★84-468-627-010 | SHIELD SHEET,HEAD (HS-T150,T380) | HS-J150 | 1 |
| | 1-12 | ★84-462-627-010 | SHIELD SHEET,HEAD (HS-T120,T280) | | 1 |
| | 1-13 | ★84-469-017-019 | PANEL,CONTROL(B)(HS-T150,T380) | * | 1 |
| | 1-13 | ★84-469-019-019 | PANEL,CONTROL(S)(HS-T150) | * | 1 |
| | 1-13 | ★84-469-009-019 | PANEL,CONTROL(W)(HS-T150,T380) | * | 1 |
| | 1-13 | ★84-467-020-019 | PANEL,CONTROL(WR)(HS-T150) | * | 1 |
| | 1-13 | ★84-467-027-019 | PANEL,CONTROL(B)(HS-T120,T280) | * | 1 |
| | 1-13 | ★84-467-028-019 | PANEL,CONTROL(S)(HS-T120,T280) | * | 1 |
| | 1-13 | ★84-467-005-019 | PANEL,CONTROL(W)(HS-T120,T280) | * | 1 |
| | 1-13 | ★84-467-029-019 | PANEL,CONTROL(WR)(HS-T120) | * | 1 |
| | 1-14 | ★84-468-024-019 | PLATE,CONTROL | HS-J150 | 1 |
| | 1-15 | ★84-468-051-019 | KNOB,SLIDE DIRECTION(B) (HS-T150,T380) | HS-J150 | 1 |
| | 1-15 | ★84-468-052-019 | KNOB,SLIDE DIRECTION(S,WR) (HS-T150,T380) | HS-J150 | 1 |
| | 1-15 | ★84-468-011-019 | KNOB,SLIDE DIRECTION(W) (HS-T150,T380) | HS-J150 | 1 |
| | 1-16 | ★84-468-045-019 | KNOB,SLIDE A(B) | HS-J150 | T150/4 T120/3 |
| | 1-16 | ★84-468-046-019 | KNOB,SLIDE A(S,WR) | HS-J150 | T150/4 T120/3 |
| | 1-16 | ★84-468-009-019 | KNOB,SLIDE A(W) | HS-J150 | T150/4 T120/3 |
| | 1-17 | ★84-468-203-019 | HOLDER ANT | HS-J150 | 1 |
| | 1-18 | ★84-475-203-019 | CUSHION,LCD B (HS-T120) | * | 1 |
| | 1-19 | ★84-475-202-019 | CUSHION,LCD A (HS-T120) | * | 1 |
| | 1-20 | ★84-468-210-119 | C-SPRING,BATTERY | HS-J150 | 1 |
| | 1-21 | ★84-468-209-019 | BATTERY TERMINAL | HS-J150 | 1 |
| | 1-22 | ★84-469-004-019 | PLATE,SIDE | * | 1 |
| | 1-23 | ★84-469-008-019 | KNOB,SLIDE H (HS-T150,T380) | * | 1 |

## EXPLODED VIEW－2

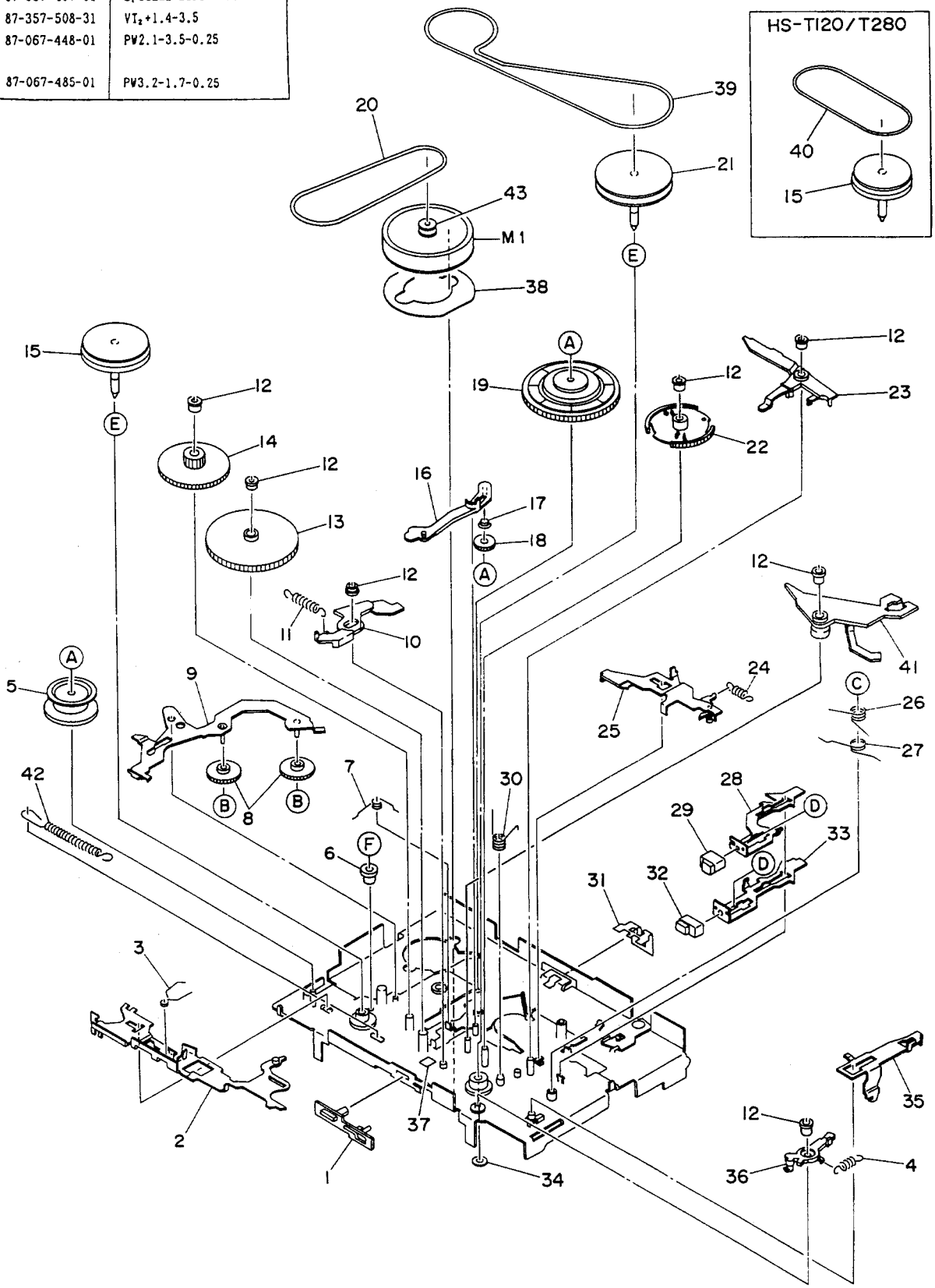
| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| A | 87-268-512-31 | V+1.4-5.5(3) |
| B | 87-067-517-01 | Special screw M1.4-2 |
| C | 87-067-516-01 | PW3-1.58-0.25 |
| D | 87-067-511-01 | Special screw M1.4-2(B) |
| E | 87-357-508-31 | VT,+1.4-3.5 |




| PART NO. CHANGED TO | REF. NO. | PART NO. | DESCRIPTION | COMMON MODEL | Q, TY |
|---|---|---|---|---|---|
| | 2-1 | ★86-541-410-210 | OUTSERT ASSY AP (HS-T150,T380) | | 1 |
| | 2-1 | ★86-553-207-010 | OUTSERT CHASSIS ASSY C (HS-T120,T280) | | 1 |
| | 2-2 | ★86-541-338-010 | T-SPRING,PINCH RP (HS-T150,T380) | | 1 |
| | 2-3 | 86-541-218-010 | PINCH LEVER R ASSY (HS-T150,T380) | | 1 |
| | 2-4 | ★84-469-003-010 | PUSH-BUTTON,STOP | * | 1 |
| | 2-5 | ★86-541-261-110 | PLATE BUTTON,STOP | | 1 |
| | 2-6 | ★86-541-329-010 | C-SPRING,STOP | | 1 |
| | 2-7 | ★86-541-270-210 | CHASSIS,SLIDE A | | 1 |
| | 2-8 | ★86-541-283-010 | TAPE GUIDE | | 1 |
| | 2-9 | ★86-541-318-110 | C-SPRING,AZIMUTH | | 1 |
| | 2-10 | ★86-541-236-010 | GEAR,REEL PLATFORM | | 2 |
| | 2-11 | ★86-541-328-010 | C-SPRING,REEL PLATFORM | | 2 |
| | 2-12 | ★86-541-221-110 | PLATE FR ASSY | | 1 |
| | 2-13 | ★86-541-383-010 | SCREW FR | | 1 |
| | 2-14 | ★86-541-244-010 | GEAR,FR | | 2 |
| | 2-15 | ★86-541-239-010 | GEAR,REW | | 1 |
| | 2-16 | 86-541-216-010 | PINCH LEVER F ASSY | | 1 |
| | 2-17 | 86-541-337-010 | T-SPRING,PINCH FP | | 1 |
| | 2-18 | 86-541-331-010 | E-SPRING,SLIDE | | 1 |
| | 2-19 | 86-541-347-110 | T-SPRING,FR LEVER | | 1 |

# EXPLODED VIEW－3

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| A | 87-067-447-01 | PW3-1.215-0.25 |
| B | 87-067-449-01 | PW3-1.5-0.25 |
| C | 87-067-487-01 | Special screw +1.7-3 |
| D | 87-357-508-31 | $VT_2$+1.4-3.5 |
| E | 87-067-448-01 | PW2.1-3.5-0.25 |
| F | 87-067-485-01 | PW3.2-1.7-0.25 |



| PART NO. CHANGED TO | REF. NO. | PART NO. | DESCRIPTION | COMMON MODEL | Q, TY |
|---|---|---|---|---|---|
| | 3-1 | ★84-468-012-010 | KNOB,SLIDE MODE (HS-T150,T380) | HS-J150 | 1 |
| | 3-2 | ★86-541-222-110 | PLATE,PINCH SELECT ASSY (HS-T150,T380) | | 1 |
| | 3-3 | ★86-541-320-410 | T-SPRING,PLAY LEVER (HS-T150,T380) | | 1 |
| | 3-4 | ★86-541-343-010 | E-SPRING,DIRECTION (HS-T150,T380) | | 1 |
| | 3-5 | 86-541-231-010 | PULLEY,RELAY A | | 1 |
| | 3-6 | ★86-541-435-010 | SCREW PLAY (HS-T150,T380) | | 1 |
| | 3-6 | ★86-541-383-010 | SCREW FR (HS-T120,T280) | | 1 |
| | 3-7 | ★86-541-334-110 | T-SPRING,AUTO LEVER | | 1 |
| | 3-8 | ★86-541-242-210 | GEAR,PLAY (HS-T150,T380) | | T150/2 T120/1 |
| | 3-9 | ★86-541-219-410 | LEVER PLAY ASSY (HS-T150,T380) | | 1 |
| | 3-9 | ★86-553-209-010 | LEVER PLAY ASSY C (HS-T120,T280) | | 1 |
| | 3-10 | ★86-541-288-110 | LEVER MODE SELECT (HS-T150,T380) | | 1 |
| | 3-11 | ★86-541-341-010 | E-SPRING,MODE SELECT (HS-T150,T380) | | 1 |
| | 3-12 | 86-541-376-010 | COLLAR,PW-BOARD | | T150/6 T120/4 |
| | 3-13 | ★86-541-237-010 | GEAR,AUTO CAM | | 1 |
| | 3-14 | 86-541-240-010 | GEAR,SLOW-DOWN | | 1 |
| | 3-15 | 86-541-401-110 | FLYWHEEL ASSY FE (HS-T150,T380) | | 1 |
| | 3-15 | 86-553-204-010 | FLYWHEEL ASSY C (HS-T120,T280) | | 1 |
| | 3-16 | ★86-541-285-010 | LEVER,AUTO | | 1 |
| | 3-17 | ★86-541-325-010 | C-SPRING,AUTO GEAR | | 1 |
| | 3-18 | ★86-541-241-010 | GEAR,AUTO | | 1 |
| | 3-19 | ★86-541-206-010 | GEAR CLUTCH ASSY (HS-T150,T380) | | 1 |
| | 3-19 | 86-553-208-010 | GEAR CLUTCH ASSY (HS-T120,T280) | | 1 |
| | 3-20 | 86-541-370-010 | BELT A2 | | 1 |
| | 3-21 | 86-541-402-110 | FLYWHEEL ASSY RA (HS-T150,T380) | | 1 |
| | 3-22 | ★86-541-249-210 | GEAR,SELECT CAM P (HS-T150,T380) | | 1 |
| | 3-23 | ★86-541-284-110 | LEVER,TRIGGER (HS-T150,T380) | | 1 |
| | 3-24 | ★86-541-332-110 | E-SPRING,PLATE LOCK | | 1 |
| | 3-25 | ★86-541-406-210 | PLATE LOCK ASSY PA | | 1 |
| | 3-26 | ★86-541-349-010 | T-SPRING,FR BUTTON (HS-T150,T380) | | 1 |
| | 3-27 | ★86-541-339-010 | T-SPRING,TRIGGER (HS-T150,T380) | | 1 |
| | 3-27 | ★86-553-210-010 | T-SPRING,EJECT (HS-T120,T280) | | 1 |
| | 3-28 | ★86-541-264-210 | PLATE,BUTTON REW | | 1 |
| | 3-29 | ★84-468-020-010 | PUSH-BUTTON,REW | HS-J150 | 1 |
| | 3-30 | ★86-541-345-110 | T-SPRING,SELECT CAM (HS-T150,T380) | | 1 |
| | 3-31 | ★86-541-323-010 | P-SPRING,CASSETTE SUPPORT | | 1 |
| | 3-32 | ★84-468-019-010 | PUSH-BUTTON,FF | HS-J150 | 1 |
| | 3-33 | ★86-541-262-010 | PLATE,BUTTON FF | | 1 |
| | 3-34 | ★87-067-537-010 | SOMA SHEET 1.55-3.5-0.3 (HS-T150,T380) | | 1 |
| | 3-35 | ★86-541-263-110 | PLATE,EJECT | | 1 |
| | 3-36 | ★86-541-286-010 | LEVER,DIRECTION (HS-T150,T380) | | 1 |
| | 3-37 | ★86-541-397-010 | SHEET 3-5 (HS-T150,T380) | | 1 |
| | 3-38 | ★87-038-078-019 | SHIELD BOARD (HS-T150,T380) | | 1 |
| | 3-39 | ★86-541-368-010 | BELT A1 (HS-T150,T380) | | 1 |
| | 3-40 | ★86-553-203-010 | BELT S (HS-T120,T280) | | 1 |
| | 3-41 | ★86-553-201-010 | LEVER,AUTO STOP (HS-T120,T280) | | 1 |
| | 3-42 | ★86-553-202-010 | E-SPRING,PLAY (HS-T120,T280) | | 1 |
| | 3-43 | ★86-541-245-010 | PULLEY MOTOR A (HS-T120,T280) | | 1 |
| | 3-43 | ★86-541-442-010 | PULLEY MOTOR A3 (HS-T150,T380) | | 1 |

## ■ ACCESSORIES/PACKAGE LIST

### HS-T150/T150M/T 380

| PART NO. CHANGED TO | REF. NO. | PART NO. | DESCRIPTION | COMMON MODEL | Q, TY |
|---|---|---|---|---|---|
| | 1 | ★84-469-902-019 | INSTRUCTION BOOKLET (Y)A | * | 1 |
| | 2 | ★84-469-903-019 | INSTRUCTION BOOKLET (Y)B(EXCEPT YU) | * | 1 |
| | 3 | 87-048-127-019 | HP-M12 (EXCEPT Y1,YJ1) | | 1 |
| | 4 | 87-048-138-019 | HP-09K (Y1,YJ1 ONLY) | | 1 |
| | 5 | ★87-080-025-019 | CLIP BELT ASSY | | 1 |

### HS-T120/T120M/T 280

| PART NO. CHANGED TO | REF. NO. | PART NO. | DESCRIPTION | COMMON MODEL | Q, TY |
|---|---|---|---|---|---|
| | 1 | ★84-475-901-019 | INSTRUCTION BOOKLET | * | 1 |
| | 2 | 87-048-127-019 | HP-M12 (EXCEPT Y1,YJ1) | | 1 |
| | 3 | 87-048-138-019 | HP-09K (Y1,YJ1 ONLY) | | 1 |
| | 4 | ★87-080-025-019 | CLIP BELT ASSY | | 1 |